

Fiber-coupled Lasers series 51nanoFI-S with Faraday isolator (PM)

Low coherence laser source with polarization-maintaining fiber cable



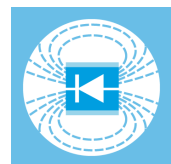
FEATURES

Laser Diode Beam Sources of type 51nanoFI-S have reduced power noise, reduced coherence length and a lowered speckle contrast.

- Integrated Faraday isolator for feedback protection (> 30 dB)
- Reduced power noise: typ. $< 0.15\%$ of P_0 (RMS, Bandwidth < 1 MHz)
- Reduced coherence length: Coherence length $\approx 300\ \mu\text{m}$
- Reduced speckle contrast
- Various wavelengths from 405 nm to 1550 nm
- Laser output power up to 27 mW
- Polarization-maintaining fiber cable (Polarization Extinction Ratio PER ≥ 23 dB (for $\lambda < 600$ nm ≥ 21 dB))
- FC APC connector (8°-polish), optional DIN AVIO or E-2000, end caps for wavelengths < 635 nm
- With interlock and key switch (conform to EN 60825-1)
- Beam profile is rotationally symmetric with Gaussian intensity distribution

Alternative: Laser Diode Beam Source [51nanoFI-N](#) (OEM version without key switch or interlock)

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- Low noise, low coherence laser module (typ. $< 0.15\%$ of P_0 (RMS, Bandwidth < 1 MHz))
 - With integrated Faraday isolator



DESCRIPTION

The fiber-coupled Laser Diode Beam Sources of type 51nanoFI-S have [reduced power noise](#) (typ. < 0.15 % of P_0 (RMS, Bandwidth < 1 MHz)), [reduced coherence length](#) ($\approx 300 \mu\text{m}$) and [a lowered speckle contrast](#). Additionally sources of type 51nanoFI-S have an integrated [Faraday isolator](#) to protect the laser source from back-reflection.

Electrical features

The output power is adjustable using a potentiometer or using the two modulation inputs for analog and TTL. The electrical cable is 1.5 m long. There are two possible supply voltages 5 V or 12 V. Other electrical cables and connectors on request.

More details on electronics type: [HP](#), [H](#).

Fiber cable

The source is fiber-coupled to a polarization-maintaining fiber cable (standard, polarization extinction ratio > 23 dB). As a result the beam profile is rotationally symmetric with Gaussian intensity distribution and a linear state of polarization. The fiber cable is equipped with an FC APC connector (8°-polish). Fiber connectors with end caps are used for wavelengths < 635 nm. The fiber cables have strain-relief and protective sleeving ($\varnothing 3 \text{ mm}$). Standard cable length is 150 cm.

Fiber Options:

- Other connector types including DIN, AVIO or E2000
- Other fiber lengths
- Incorporated vacuum feed-through

Faraday isolator

[Faraday isolators](#) are used to protect the laser sources from back-reflection, which causes mode hopping, laser noise, frequency instability and a shorter laser lifetime. The Faraday isolator has a high isolation > 30 dB.

Laser safety

The laser safety is conform to IEC 825 / EN 60825-1.

- Interlock chain for the remote deactivation of the laser
- Laser power-up is only possible using the key switch
- LED status indicator for "Laser ON"

An OEM version is available as type [51nanoFI-N](#) without key switch or interlock which is not conform to EN 60825-1.

TECHNICAL DATA

Fiber-coupled Lasers series 51nanoFI-S with Faraday isolator (PM)

Series	51nanoFI-S
Wavelength	405 nm - 1550 nm
Power noise	typ. < 0.15 % of P_0 (RMS, BW < 1 MHz)
Coherence length	$\approx 300 \mu\text{m}$
Fiber cable	polarization-maintaining
Fiber cable length	1.5 m (standard)

Fiber connector type	FC APC (standard)
Supply voltage	5 V or 12 V
Electr. cable length	1.5 m (standard)
Connector type (5V)	Lumberg SV30 IEC 61076-2-106
Connector type (12V)	Lumberg SV40 IEC 61076-2-106
Cable type	3 x AWG 26 C UL
Modulation	analog and TTL
Operating temperature	15 - 35°C ± 0.5°C
Dimensions	
Weight	

ORDER OPTIONS

Order Code	Wavelength	Typ. Output Power P_o	Supply Voltage	Fiber Type	Connector	End cap	Electronics Type	Laser Class	Casing Type
<u>51nanoFI-S-405-1-Y07-P-12-4-28-0-150</u>	405 nm	0.9 mW	12 V	Polarization-maintaining	FC APC	x	HP	2	S1
<u>51nanoFI-S-405-12-M29-P-12-4-28-0-150</u>	405 nm	12 mW	12 V	Polarization-maintaining	FC APC	x	HP	3B	S1
<u>51nanoFI-S-445-15-G02-P-12-4-28-0-150</u>	445 nm	15 mW	12 V	Polarization-maintaining	FC APC	x	HP	3B	S1
<u>51nanoFI-S-520-6-Q11-P-12-4-28-0-150</u>	520 nm	6 mW	12 V	Polarization-maintaining	FC APC	x	HP	3B	S1
<u>51nanoFI-S-635-1-H10-P-5-2-28-0-150</u>	635 nm	0.9 mW	5 V	Polarization-maintaining	FC APC		H	2	S1
<u>51nanoFI-S-640-15-H21-P-5-2-28-0-150</u>	640 nm	15 mW	5 V	Polarization-maintaining	FC APC		H	3B	S1
<u>51nanoFI-S-660-1-M01-P-5-2-28-0-150</u>	660 nm	0.9 mW	5 V	Polarization-maintaining	FC APC		H	2	S1
<u>51nanoFI-S-660-25-H26-P-5-2-28-0-150</u>	660 nm	25 mW	5 V	Polarization-maintaining	FC APC		H	3B	S1
<u>51nanoFI-S-785-10-Q06-P-5-2-28-0-150</u>	785 nm	10 mW	5 V	Polarization-maintaining	FC APC		H	3B	S2
<u>51nanoFI-S-808-16-G15-P-5-2-28-0-150</u>	808 nm	16 mW	5 V	Polarization-maintaining	FC APC		H	3B	S1
<u>51nanoFI-S-830-10-H19-P-5-2-28-0-150</u>	830 nm	10 mW	5 V	Polarization-maintaining	FC APC		H	3B	S2
<u>51nanoFI-S-850-15-TH11-P-5-2-28-0-150</u>	850 nm	15 mW	5 V	Polarization-maintaining	FC APC		H	3B	S1
<u>51nanoFI-S-980-2-TH4-P-5-2-28-0-150</u>	980 nm	2 mW	5 V	Polarization-maintaining	FC APC		H	3R	S2
<u>51nanoFI-S-1064-8-Q05-P-5-2-28-0-150</u>	1064 nm	8 mW	5 V	Polarization-maintaining	FC APC		H	3B	S2
<u>51nanoFI-S-1310-2-M14-P-5-2-28-0-150</u>	1310 nm	2 mW	5 V	Polarization-maintaining	FC APC		H	1	S1
<u>51nanoFI-S-1550-4-Q04-P-5-2-28-0-150</u>	1550 nm	4 mW	5 V	Polarization-maintaining	FC APC		H	1	S1

Other types e.g. with single-mode fiber cable are available.

TECHNOTES

- [Fiber-coupled low noise beam source](#)
[Comparison of a low noise laser source to a conventional laser source](#)

- [51nano: Electronics Type HP](#)
[Electronic features for electronics type HP](#)
- [51nano: Electronics Type H](#)
[Electronic features for electronics type H](#)
- [Article - Fiber coupled low coherence laser sources](#)
[Series 51nano](#)

DOWNLOADS



[Article_51Nano.pdf \(Technote\)](#)

This downloads section only includes general downloads for the complete series.

Please access the individual product pages (using the product configurator, the product list, order options or the search button if you have a complete order code). Here you will find specific downloads including technical drawings or stepfiles.

ACCESSORIES

PS120516E Power Supply 12 V

PS051003E Power Supply 5 V

RELATED PRODUCTS

51NANOFI-N WITH FARADAY ISOLATOR (PM/OEM) Fiber-coupled low coherence laser source with polarization-maintaining fiber cable (OEM version)

51NANO-S (POLARIZATION-MAINTAINING) Fiber-coupled low coherence laser source with polarization-maintaining fiber cable

FIBER COLLIMATOR SERIES 60FC for collimating radiation exiting an optical fiber or as an incoupler

FIBER COLLIMATOR SERIES 60FC-T for collimating large beam diameters and with additional TILT adjustment

This is a printout of the page <https://sukhamburg.com/products/fiberoptics/51nano/51nanofi/pm.html> from 4/26/2024

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